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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,213	11/09/2001	Egon Mergenthaler	13292-009001/2001E17454DE	6469
26161	7590	02/04/2005	EXAMINER	
FISH & RICHARDSON PC 225 FRANKLIN ST BOSTON, MA 02110			FARAHANI, DANA	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 02/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/037,213

Applicant(s)

EGON MERGENTHALER

Examiner

Dana Farahani

Art Unit

2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 1-12 and 17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hoshino et al., hereinafter Hoshino (US Patent Application Publication 2001/0012671), newly cited.

Regarding claims 1, 5, and 6, Hoshino discloses in figure 1, a semiconductor substrate 1 having a chip formed thereon, the chip comprising an electrical device 7;

a kerf region, at the vertical edge boundary of the substrate, proximate to the chip;

a conductive connector M1 forming an electrical connection between the chip and the kerf region;

wherein the device is grounded by the conductive connector (note that it is connected to the source region 10);

wherein the conductive connector comprises at least a conductor line (the horizontal portion) and two metal plugs 13 substantially covered by the conductor line.

Regarding claim 2, there is an edge seal (the edge of the layer 20 and its immediate neighboring layers) along an outer perimeter of the chip, wherein the conductive connector crosses the edge seal, as can be seen in the figure.

Regarding claim 3, the conductive connector is not in electrical communication with the edge seal.

Regarding claims 4, 8, 9, 11, and 18, the conductor line of the conductive connector comprises a metal line (see paragraph 226), and the device is a transistor (as can be seen in the figure it is a MOS transistor).

Regarding claim 7, Hoshino discloses a semiconductor substrate 1 having a chip formed thereon;

an edge seal (the edge of the substrate) along an outer perimeter of the chip; and
a conductive connector M1 forming an electrical connection between the edge seal and the device to ground the device;

wherein the conductive connector comprises at least a conductor line (the horizontal portion) and two metal plugs 13 substantially covered by the conductor line.

Regarding claims 10 and 12, Hoshino discloses the limitations in the claims, as discussed above with regard to claims 1 and 7, further disclosing removing an end portion of the conductive connector from the kerf (see figures 23a and 23b).

Regarding claim 17, Hoshino discloses forming a chip on a semiconductor substrate 1;
forming an edge seal, at the edge of the device, along an outer perimeter of the chip;
forming an electrically conductive connector M1, the conductive connector connecting the edge seal, and the connector has at least a conductor line (the horizontal part) and two metal plugs 13 substantially covered by the conductor line; and
removing a portion of the conductive connector (see figures 23a and 23b).
regarding claim 19, the conductive connector connecting the edge seal and connects the device to ground in the edge seal (note that the connector is connected to the source of the transistor).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 13, 15, and 20- 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino as applied to claims 10 and 17 above, and further in view of Chen et al., hereinafter Chen (US Patent 4,534,816), previously cited.

Regarding claims 13, 15, 20, and 22, Hoshino substantially discloses the limitations in the claims, as discussed above, except for the use of (plasma) etching.

Chen discloses the advantages of plasma etching such as high etching rate and improved etch uniformity. Therefore, it would have been obvious to one of ordinary skill in the art at the

time the invention was made to use this kind of etching to benefit from the advantages associated with this kind of etching, such as high etching rate and etch uniformity, while doing the cutting process of the Hoshino structure.

Regarding claim 21, a portion of the conductive connector which is removed is between the edge seal and the device (see figure 23a).

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino as applied to claim 10 above, and further in view of Bolam (U.S. Patent Application Publication 2002/0043686), previously cited.

Hoshino substantially discloses the limitations in the claim, as discussed above, except for sawing through the kerf.

Bolam discloses in figure 7a, sawing is used to as a method to cut through the semiconductor device layers shown in the figure (see page 4, paragraph 0052). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the sawing method to cut through the kerf region of the Hoshino device to avoid the etching process, and expenses and complications associated with that method.

6. Claims 16 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoshino as applied to claims 10 and 17 above, and further in view of Lee et al., hereinafter Lee (U.S. Patent 6,251,782), previously cited.

Hoshino substantially discloses the limitations in the claims, as discussed above, except for ion beam milling being used to remove parts of the conductive connector.

Lee discloses ion beam milling is used to remove layers of materials accurately (see column 5, lines 33-56). Therefore, it would have been obvious to one of ordinary skill in the art

at the time the invention was made to use this method to remove parts of layers of the conductive connector because of the method accuracy.

Product-by-Process Limitations

A comparison of the recited process with the prior art process does NOT serve to resolve the issue concerning patentability of the product. *In re Fessman*, 489 F2d 742, 180 USPQ 324 (CCPA 1974). Whether a product is patentable depends on whether it is known in the art or it is obvious, and is not governed by whether the process by which is made is patentable. *In re Klug*, 333 F2d 905, 142 USPQ 161 (CCPA 1964). In an ex parte case, product by process claims are not constructed as being limited to the product formed by the specific process recited. *In re Hirao et al.*, 535 F2d 67, 190 USPQ 15, see footnote 3 (CCPA 1976). Therefore, in claim 5, the plasma etching process step is given no patentable weight.

Response to Arguments

7. Applicant's arguments with respect to the rejected claims have been considered but are moot in view of the new grounds of rejection.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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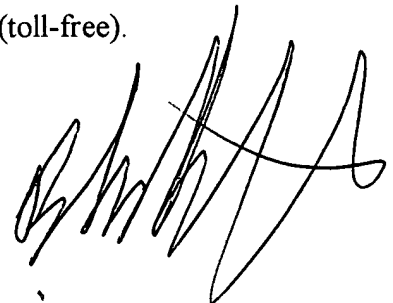
MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dana Farahani whose telephone number is (571)272-1706. The examiner can normally be reached on M-F 9:00AM - 6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bill Baumeister can be reached on (571)272-1722. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

D. Farahani

A handwritten signature in black ink, appearing to read 'B. Baumeister', with a stylized, flowing script.

BRADLEY BAUMEISTER
PRIMARY EXAMINER